



FOWPI

FIRST OFFSHORE WIND
PROJECT OF INDIA

Weather Windows for Installation



This Project is funded by The European Union



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1 About FOWPI

The First Offshore Wind Project of India (FOWPI) is part of the “Clean Energy Cooperation with India (CECI) “, which aims at enhancing India's capacity to deploy low carbon energy production and improve energy efficiency, thereby contributing to the mitigation of global climate change. Project activities will support India's efforts to secure the energy supply security, within a well-established framework for strategic energy cooperation between the EU and India.

FOWPI is planned to achieve the first 200MW sized offshore wind farm near the coast of Gujarat, 25km off Jafarabad. Project will emphasis on bringing the vast experience of offshore wind rich European countries to India which aims to provide technical assistance for setting up the wind-farm and creation of a knowledge centre in the country.

FOWPI will be led by COWI A/S (Denmark) with key support from WindDForce Management Ltd. (India). The project is supported by European Union (EU), Ministry of New and Renewable Energy- India (MNRE) and National Institute of Wind Energy- India (NIWE).

Project is awarded under the Indo-European co-operation on Renewable Energy Program and funded through European Union.

FOWPI will focus on finalisation of design and technical specification of the windfarm including foundation, electrical network, turbines etc.. This will also include undertaking specific technical studies for the selected site (based on the outcome of FOWIND project), including coastal surveys, environmental assessments, cost-benefit analysis, transmission layouts, monitoring systems, safety measures, and other relevant technical studies as identified.

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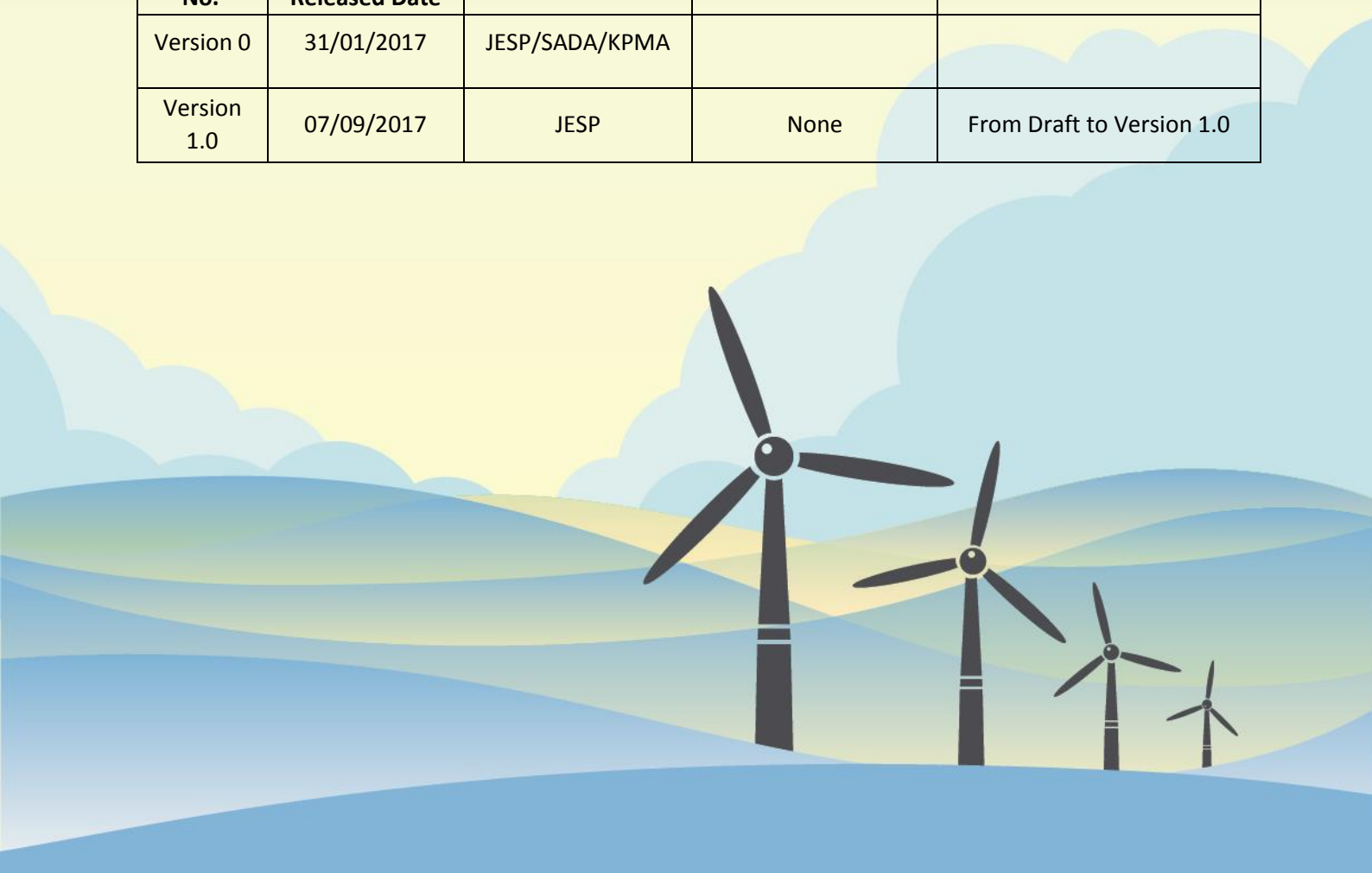
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Weather Windows for Installation

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FOWPI - WEATHER WINDOWS FOR INSTALLATION



COWI

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1 Introduction

Weather windows and weather downtime are of importance for transportation, installation and maintenance of an offshore wind farm (cf. Ref. /1/ and Ref. /2/). Adverse weather conditions may become governing for the possible operation period for the above tasks. Accessibility and safety as well as the choice of an appropriate service vessel depend on the knowledge of weather windows and weather downtime.

The present report gives the weather windows and weather downtime to be used at the location of a planned wind farm site in Gulf of Khambhat, Gujarat, India.

The weather windows and downtime are derived on basis of the hindcast time series data of wind speed and significant wave heights derived in the preliminary metocean study by COWI (cf. Ref. /3/). It is recommended to update the results of the present study when long-duration specific wind measurements becomes available.

2 References and abbreviations

2.1 References

- Ref. /1/ IEC 61400-3. Wind turbines - Part 3: Design requirements for offshore wind turbines. Edition 1.0 2009-02
- Ref. /2/ DNVGL-ST-0437. Standard: Loads and site conditions for wind turbines. Edition November 2016
- Ref. /3/ A073635-014-001. Gujarat Metocean Report. COWI
- Ref. /4/ <https://www.mikepoweredbydhi.com/products/mike-c-map>

2.2 Abbreviations

The main abbreviations and symbols used in the present report are listed below.

| | |
|----------|---|
| CD | Chart Datum |
| DT | Downtime |
| FOWPI | First Offshore Wind Project in India |
| H_{m0} | Significant wave height [m] |
| LAT | Lowest Astronomical Tide [m] |
| MSL | Mean Sea Level [m] |
| ORP | Operation Reference Period |
| UTM | Universal Transverse Mercator, grid-based coordinate system |

WGS84 World Geodetic System, reference coordinate system

WS Reference 10-minute average Wind Speed at 10 m above MSL [m/s]

WW Weather Window

3 Location

The location of the First Offshore Wind Project of India (FOWPI) is in the Gulf of Khambhat in Gujarat region, which is located on the North West coast of India, as shown in Figure 3-1.

The set-up of the FOWPI site is shown on the map in Figure 3-2 while the bathymetry in the local area (as extracted from MIKE C-Map, Ref. /4/) is shown in Figure 3-3.

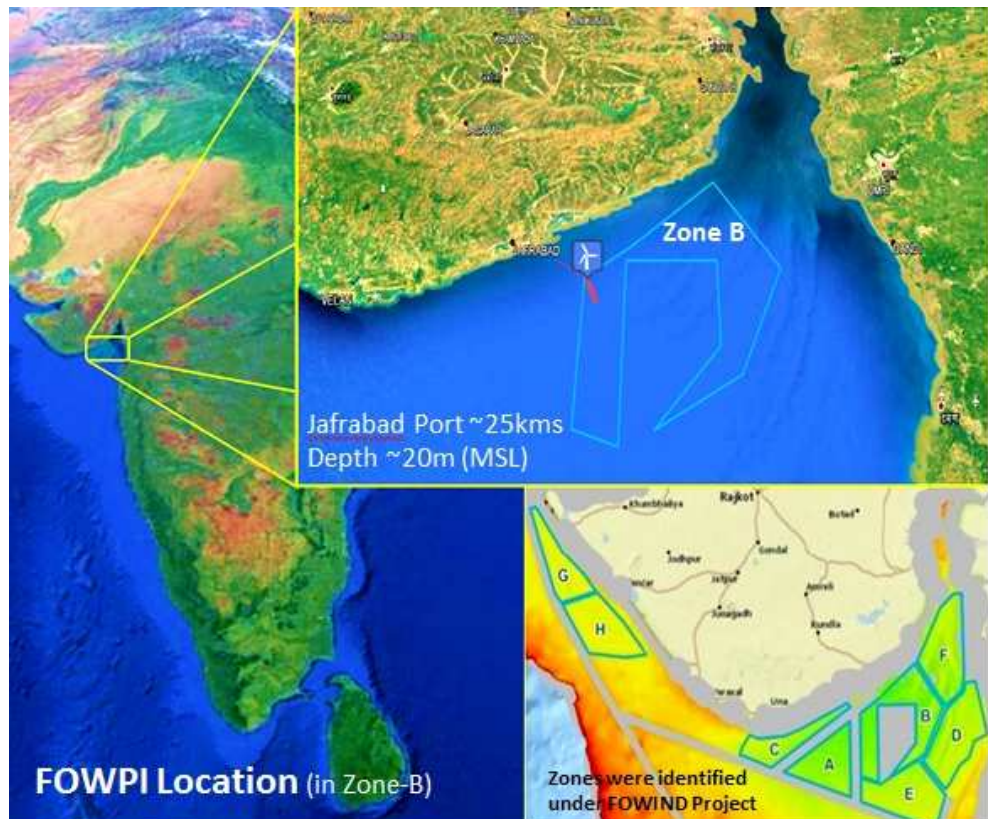


Figure 3-1 Location of FOWPI project in the Gujarat region of India

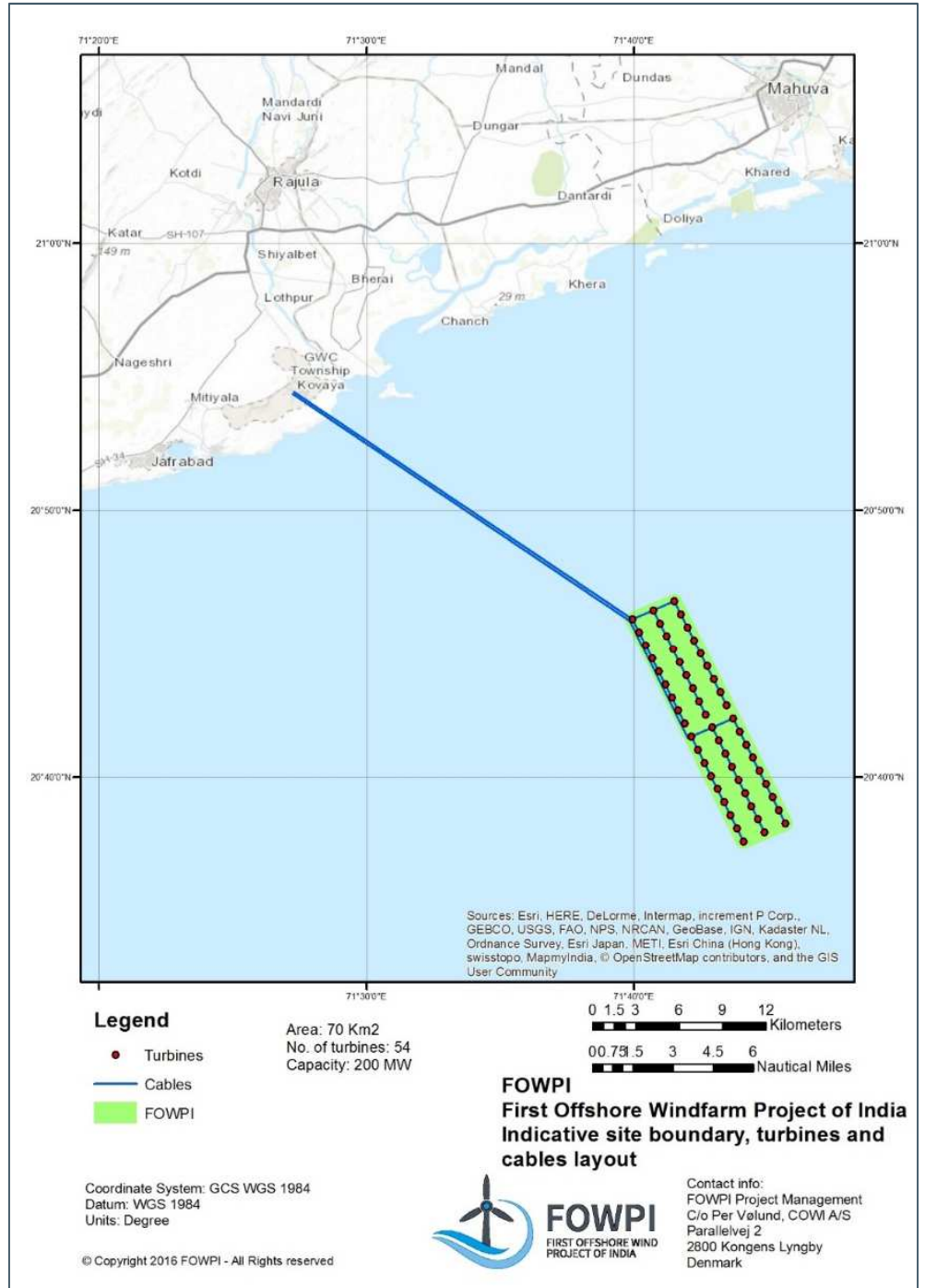


Figure 3-2 Indicative WTG layout, project boundary and cable route.

The derived weather window and downtime data presented in this report are derived on basis of the continuous hindcast time series of significant wave height, H_{m0} , and 10-minute averaged wind speed, WS , at a height of 10 mMSL from the extraction point P2 shown in Figure 3-3. The duration of the time series is 5 years (2010-01-01 to 2014-12-31) and the location of the extraction point P2 is given in Table 3-1.

Table 3-1 Location of data extraction point P2

| Extraction point | UTM42, Easting [m] | UTM42, Northing [m] | Longitude [deg E] | Latitude [deg N] |
|------------------|--------------------|---------------------|-------------------|------------------|
| P2 | 783217 | 2290278 | 71.7188 | 20.6906 |

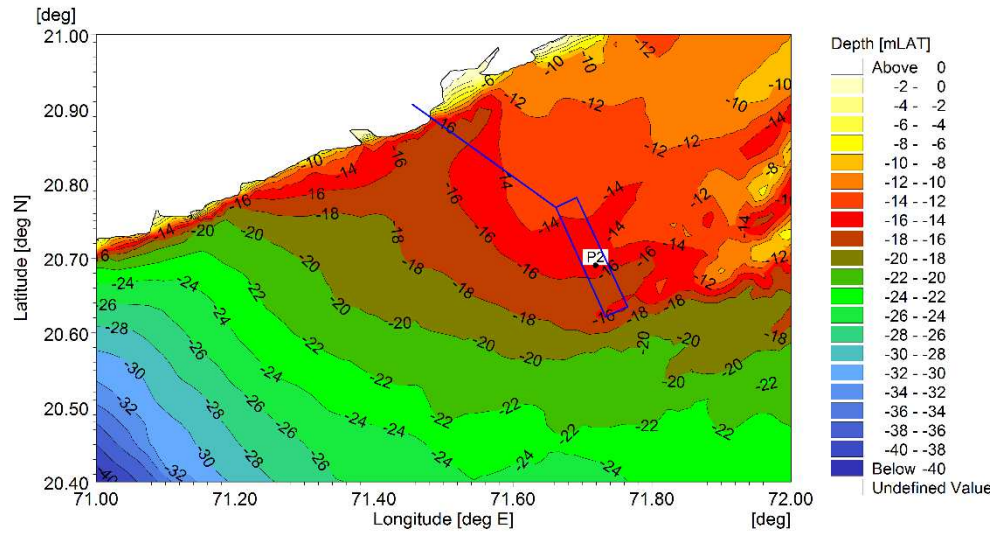


Figure 3-3 Bathymetry at FOWPI site. Indicative site boundary and cable route. Water depths are extracted from MIKE C-Map (Ref. /4/) and are given with respect to CD. The point, P2, indicates the location of the metocean data extraction point used in the weather window and downtime analysis.

The data presented in this report are based on the continuous 5 year long hindcast time series from Ref. /3/. The hindcast does not contain cyclones, but given the nature and rarity of cyclones in the region, these types of events will most likely have a minor influence on the number and average duration of weather windows or weather downtime. It is thus considered justified to omit cyclones from the present analyses.

4 Weather Windows and Downtime

In the present analyses, the concepts of Weather Window and Downtime are defined as follows:

- > **Weather Window (WW):** A continuous period of time in which a given parameter (H_{m0} or WS) does not exceed a given value. The WW is given with respect to an Operation Reference Period (ORP) which is the time needed for a given operation. Hence, a WW of e.g. 2 hours will not be considered in the analysis if the ORP is 3 hours. The presentation of a WW during a given period of time (e.g. one calendar month) is given as the probability of total WW duration relative to the total duration of the period of concern.

- > **Downtime (DT):** A continuous period of time in which a given parameter (H_{m0} or WS) exceeds a given value. The DT is given with respect to an Operation Reference Period (ORP) which is the time needed for a given operation. Hence, a DT of e.g. 2 hours will not be considered in the analysis if the ORP is 3 hours. The presentation of a DT during a given period of time (e.g. one calendar month) is given as the probability of total DT duration relative to the total duration of the period of concern.

Disregarding the ORP the DT becomes equal to the exceedance probability of a given parameter and the WW becomes equal to the non-exceedance probability of a given parameter.

All the following tables are given for monthly data as well as for annual data and are based on five years of data from 2011 to 2015. The data tables represent the average frequency of exceedance and number of weather windows in the five years (i.e. average of five Januarys, Februarys, etc.).

The exceedance probability for the significant wave height, H_{m0} , for monthly and annual data is given in Table 4-1 while the exceedance probability for the 10-minute average wind speed at a height of 10m above MSL for monthly and annual data is given in Table 4-2.

The probabilities of WW and DT in which the wave height or wind speed is smaller/larger than a given threshold value have been determined. The minimum durations of ORP analyses are defined as time intervals of 3, 6, 12, 18, 24, 36, 48, 72 and 96 hours, respectively. The following threshold values have been used for H_{m0} and WS :

- > The significant wave height, H_{m0} , is smaller/larger than 0.25m, 0.50m, 0.75m, 1.00m, 1.25m, 1.50m, 1.75m, 2.00m, 2.25m, 2.50m, 2.75m or 3.00m
- > The wind speed, WS , (10-minute average at 10 mMSL) is smaller/larger than 1.0m/s, 2.0m/s, 3.0m/s, 4.0m/s, 5.0m/s, 6.0m/s, 7.0m/s, 8.0m/s, 9.0m/s, 10.0m/s, 11.0m/s or 12.0m/s

Weather windows for all significant wave height criteria are presented in Table 4-3 and Table 4-4, whereas weather windows for all wind speed criteria are presented in Table 4-6 and Table 4-7. Notice at a WW of 0 hours corresponds to the non-exceedance probability.

Downtime for all significant wave height criteria are presented in Table 4-5 , whereas downtime for all wind speed criteria are presented in Table 4-8. Notice at a DT of 0 hours corresponds to the exceedance probability.

Table 4-5 **Downtime** probability for significant wave height criteria ($H_{m0} > x$). Tables for wave height criteria of $H_{m0} > 0.25m, 0.50m, 0.75m, 1.00m, 1.25m, 1.50m, 1.75m, 2.00m, 2.25m, 2.50m, 2.75m$ and $3.00m$ are presented

| MINIMUM DOWNTIME [Hours] | | | | | | | | | | |
|--------------------------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| $H_{m0} > 0.25m$ | 0 | 3 | 6 | 12 | 18 | 24 | 36 | 48 | 72 | 96 |
| January | 87.69 | 87.53 | 87.31 | 87.10 | 87.10 | 86.59 | 85.05 | 83.84 | 79.09 | 73.33 |
| February | 85.70 | 85.64 | 84.66 | 83.19 | 82.42 | 80.50 | 79.55 | 75.83 | 73.85 | 70.57 |
| March | 98.41 | 98.41 | 98.33 | 98.33 | 98.33 | 98.33 | 98.33 | 98.33 | 98.33 | 98.33 |
| April | 99.56 | 99.56 | 99.56 | 99.56 | 99.56 | 97.25 | 97.25 | 97.25 | 97.25 | 97.25 |
| May | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 |
| June | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 |
| July | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 |
| August | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 |
| September | 99.94 | 99.94 | 99.94 | 99.94 | 99.94 | 99.94 | 99.94 | 99.94 | 99.94 | 99.94 |
| October | 97.88 | 97.82 | 97.82 | 97.82 | 97.82 | 97.82 | 97.82 | 97.82 | 97.82 | 97.82 |
| November | 96.42 | 96.39 | 96.28 | 95.25 | 94.78 | 94.28 | 94.28 | 94.28 | 94.28 | 94.28 |
| December | 89.62 | 89.53 | 89.16 | 88.08 | 87.27 | 87.27 | 87.27 | 86.17 | 86.17 | 86.17 |

| MINIMUM DOWNTIME [Hours] | | | | | | | | | | |
|--------------------------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| $H_{m0} > 0.50m$ | 0 | 3 | 6 | 12 | 18 | 24 | 36 | 48 | 72 | 96 |
| January | 46.77 | 46.61 | 45.70 | 42.26 | 40.46 | 39.33 | 36.21 | 31.67 | 20.65 | 17.53 |
| February | 38.27 | 38.18 | 37.50 | 34.43 | 32.45 | 30.14 | 28.19 | 22.10 | 11.26 | 7.86 |
| March | 66.53 | 66.18 | 64.92 | 61.26 | 54.65 | 50.97 | 49.49 | 45.00 | 32.69 | 27.20 |
| April | 87.03 | 87.03 | 86.94 | 85.33 | 80.89 | 75.89 | 75.06 | 75.06 | 71.44 | 64.58 |
| May | 99.78 | 99.78 | 99.78 | 99.78 | 99.78 | 99.78 | 99.78 | 99.78 | 99.78 | 99.78 |
| June | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 |
| July | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 |
| August | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 |
| September | 98.08 | 98.03 | 97.92 | 97.92 | 97.92 | 97.92 | 97.92 | 97.92 | 97.92 | 97.92 |
| October | 71.34 | 71.10 | 70.24 | 67.93 | 65.48 | 64.44 | 63.52 | 63.52 | 58.55 | 53.87 |
| November | 56.64 | 55.94 | 55.00 | 50.25 | 48.08 | 46.97 | 46.97 | 46.97 | 38.64 | 29.92 |
| December | 51.57 | 51.22 | 50.63 | 46.41 | 41.46 | 39.36 | 37.10 | 31.26 | 24.13 | 12.05 |

| MINIMUM DOWNTIME [Hours] | | | | | | | | | | |
|--------------------------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| $H_{m0} > 0.75m$ | 0 | 3 | 6 | 12 | 18 | 24 | 36 | 48 | 72 | 96 |
| January | 9.65 | 9.41 | 8.79 | 6.64 | 4.41 | 3.44 | 2.63 | 1.59 | 0.00 | 0.00 |
| February | 5.11 | 5.11 | 4.05 | 2.81 | 1.51 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| March | 10.48 | 10.16 | 9.57 | 7.96 | 7.31 | 2.42 | 1.59 | 1.59 | 1.59 | 1.59 |
| April | 37.81 | 37.47 | 36.67 | 31.47 | 27.86 | 23.19 | 23.19 | 18.56 | 18.56 | 16.22 |
| May | 94.03 | 94.03 | 94.03 | 93.28 | 90.91 | 87.96 | 87.96 | 86.75 | 85.38 | 82.93 |
| June | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 |
| July | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 |
| August | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 |
| September | 88.89 | 88.67 | 87.89 | 87.33 | 86.64 | 86.14 | 86.14 | 85.14 | 85.14 | 85.14 |
| October | 24.78 | 24.44 | 23.06 | 20.94 | 20.16 | 18.55 | 16.72 | 13.12 | 13.12 | 10.46 |
| November | 14.92 | 14.67 | 14.03 | 12.25 | 11.03 | 10.50 | 8.81 | 5.50 | 2.31 | 0.50 |
| December | 9.23 | 9.17 | 8.82 | 7.75 | 6.78 | 5.92 | 5.81 | 3.63 | 2.02 | 0.00 |

| MINIMUM DOWNTIME [Hours] | | | | | | | | | | |
|--------------------------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| $H_{m0} > 1.00m$ | 0 | 3 | 6 | 12 | 18 | 24 | 36 | 48 | 72 | 96 |
| January | 0.65 | 0.65 | 0.65 | 0.35 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| February | 0.06 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| March | 0.65 | 0.65 | 0.65 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| April | 8.42 | 8.25 | 7.67 | 6.53 | 5.25 | 3.67 | 3.67 | 2.67 | 0.00 | 0.00 |
| May | 55.08 | 54.97 | 53.79 | 45.89 | 40.86 | 37.72 | 36.88 | 35.83 | 28.63 | 24.52 |
| June | 99.86 | 99.86 | 99.86 | 99.86 | 99.86 | 99.86 | 99.86 | 99.86 | 99.86 | 99.75 |
| July | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 |
| August | 98.12 | 98.04 | 97.93 | 97.55 | 97.55 | 97.55 | 97.55 | 97.55 | 97.55 | 97.55 |
| September | 71.06 | 70.97 | 69.08 | 66.97 | 66.50 | 64.83 | 64.83 | 63.81 | 63.81 | 63.81 |
| October | 5.43 | 5.43 | 5.43 | 5.16 | 5.16 | 5.16 | 3.39 | 3.39 | 3.39 | 3.39 |
| November | 0.86 | 0.86 | 0.50 | 0.50 | 0.06 | 0.06 | 0.06 | 0.06 | 0.06 | 0.06 |
| December | 1.13 | 1.13 | 1.02 | 0.81 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |

Table 4-7 **Weather Windows** probability for wind speed criteria (WS<x). Tables for wind speed criteria of WS<1.0m/s, 2.0m/s, 3.0m/s, 4.0m/s, 5.0m/s, 6.0m/s, 7.0m/s, 8.0m/s, 9.0m/s, 10.0m/s, 11.0m/s, 12.0m/s, 13.0m/s and 14.0m/s are presented

| MINIMUM WEATHER WINDOW [Hours] | | | | | | | | | | |
|--------------------------------|------|------|------|------|------|------|------|------|------|------|
| WS < 1m/s | 0 | 3 | 6 | 12 | 18 | 24 | 36 | 48 | 72 | 96 |
| January | 0.51 | 0.48 | 0.16 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| February | 0.53 | 0.24 | 0.24 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| March | 0.89 | 0.46 | 0.22 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| April | 0.25 | 0.25 | 0.17 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| May | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| June | 0.19 | 0.08 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| July | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| August | 0.13 | 0.08 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| September | 0.31 | 0.11 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| October | 3.58 | 2.72 | 1.13 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| November | 0.92 | 0.33 | 0.22 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| December | 0.27 | 0.16 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |

| MINIMUM WEATHER WINDOW [Hours] | | | | | | | | | | |
|--------------------------------|-------|-------|-------|-------|------|------|------|------|------|------|
| WS < 2m/s | 0 | 3 | 6 | 12 | 18 | 24 | 36 | 48 | 72 | 96 |
| January | 1.83 | 1.51 | 1.10 | 0.40 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| February | 3.31 | 3.01 | 1.54 | 0.38 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| March | 4.68 | 4.22 | 2.53 | 0.83 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| April | 3.00 | 2.61 | 0.97 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| May | 0.38 | 0.24 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| June | 1.50 | 1.33 | 0.86 | 0.42 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| July | 0.16 | 0.11 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| August | 1.67 | 1.48 | 0.75 | 0.40 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| September | 4.72 | 4.28 | 2.33 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| October | 19.44 | 18.76 | 14.62 | 10.30 | 5.48 | 2.31 | 0.00 | 0.00 | 0.00 | 0.00 |
| November | 6.14 | 5.50 | 3.67 | 0.69 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| December | 2.18 | 1.96 | 1.24 | 0.32 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |

| MINIMUM WEATHER WINDOW [Hours] | | | | | | | | | | |
|--------------------------------|-------|-------|-------|-------|-------|-------|-------|-------|------|------|
| WS < 3m/s | 0 | 3 | 6 | 12 | 18 | 24 | 36 | 48 | 72 | 96 |
| January | 6.29 | 5.81 | 4.97 | 2.26 | 1.10 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| February | 11.82 | 11.26 | 9.37 | 4.85 | 2.60 | 0.80 | 0.00 | 0.00 | 0.00 | 0.00 |
| March | 14.92 | 14.01 | 10.51 | 3.49 | 2.42 | 2.42 | 0.00 | 0.00 | 0.00 | 0.00 |
| April | 12.64 | 11.86 | 7.81 | 1.58 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| May | 1.85 | 1.61 | 1.53 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| June | 3.61 | 3.31 | 2.75 | 1.03 | 0.56 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| July | 1.13 | 0.99 | 0.43 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| August | 6.32 | 5.99 | 4.97 | 2.77 | 2.39 | 1.77 | 1.77 | 1.77 | 0.00 | 0.00 |
| September | 16.78 | 16.03 | 14.53 | 9.08 | 7.06 | 4.19 | 2.28 | 0.00 | 0.00 | 0.00 |
| October | 42.23 | 41.53 | 39.27 | 31.13 | 22.85 | 19.11 | 15.32 | 10.16 | 0.00 | 0.00 |
| November | 17.92 | 17.22 | 15.81 | 10.36 | 5.39 | 2.58 | 1.14 | 0.00 | 0.00 | 0.00 |
| December | 8.47 | 7.91 | 6.91 | 3.44 | 2.66 | 2.18 | 1.53 | 1.53 | 0.00 | 0.00 |

| MINIMUM WEATHER WINDOW [Hours] | | | | | | | | | | |
|--------------------------------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| WS < 4m/s | 0 | 3 | 6 | 12 | 18 | 24 | 36 | 48 | 72 | 96 |
| January | 20.11 | 19.57 | 18.06 | 13.33 | 9.25 | 5.67 | 3.84 | 1.42 | 1.42 | 0.00 |
| February | 31.24 | 30.53 | 27.42 | 20.51 | 15.46 | 13.27 | 6.00 | 4.82 | 3.28 | 0.00 |
| March | 35.75 | 34.97 | 31.32 | 20.51 | 6.94 | 5.22 | 4.35 | 0.00 | 0.00 | 0.00 |
| April | 33.36 | 32.78 | 30.25 | 17.08 | 2.94 | 0.69 | 0.00 | 0.00 | 0.00 | 0.00 |
| May | 8.23 | 7.18 | 5.62 | 1.48 | 1.10 | 1.10 | 1.10 | 0.00 | 0.00 | 0.00 |
| June | 6.94 | 6.53 | 5.31 | 3.72 | 1.69 | 1.69 | 1.69 | 1.69 | 0.00 | 0.00 |
| July | 3.71 | 3.28 | 2.39 | 1.32 | 0.56 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| August | 14.97 | 14.41 | 13.12 | 9.70 | 8.84 | 8.31 | 6.75 | 5.48 | 2.04 | 0.00 |
| September | 35.31 | 34.81 | 33.03 | 29.42 | 23.61 | 19.36 | 16.33 | 11.56 | 7.47 | 3.03 |
| October | 65.78 | 65.54 | 62.90 | 57.63 | 51.91 | 48.17 | 43.60 | 33.79 | 21.42 | 16.85 |
| November | 39.42 | 38.69 | 36.97 | 30.00 | 19.25 | 14.36 | 13.06 | 8.06 | 6.28 | 3.94 |
| December | 22.30 | 21.74 | 20.12 | 16.41 | 11.49 | 9.31 | 6.94 | 2.39 | 2.39 | 0.00 |

MINIMUM WEATHER WINDOW [Hours]

| WS < 5m/s | 0 | 3 | 6 | 12 | 18 | 24 | 36 | 48 | 72 | 96 |
|-----------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| January | 39.38 | 39.09 | 37.31 | 34.52 | 28.20 | 22.93 | 18.39 | 12.50 | 4.89 | 2.96 |
| February | 58.39 | 58.19 | 56.74 | 51.65 | 43.65 | 38.18 | 33.57 | 30.44 | 15.66 | 10.02 |
| March | 68.84 | 68.52 | 67.12 | 62.02 | 51.24 | 40.43 | 32.15 | 27.10 | 10.48 | 0.00 |
| April | 60.19 | 59.67 | 56.92 | 49.94 | 32.50 | 13.28 | 11.31 | 7.61 | 2.11 | 0.00 |
| May | 24.46 | 23.52 | 20.91 | 10.70 | 2.69 | 1.18 | 1.18 | 0.00 | 0.00 | 0.00 |
| June | 13.72 | 13.14 | 11.22 | 7.89 | 6.00 | 4.33 | 4.33 | 3.28 | 0.00 | 0.00 |
| July | 8.68 | 8.25 | 7.63 | 3.63 | 3.20 | 2.61 | 1.10 | 0.00 | 0.00 | 0.00 |
| August | 24.33 | 24.09 | 22.88 | 20.91 | 19.68 | 15.40 | 14.76 | 14.76 | 14.76 | 3.06 |
| September | 53.25 | 52.94 | 51.61 | 49.19 | 44.42 | 40.64 | 37.97 | 35.50 | 33.53 | 27.25 |
| October | 84.84 | 84.76 | 84.03 | 80.03 | 74.97 | 72.12 | 69.68 | 69.68 | 64.70 | 54.54 |
| November | 62.97 | 62.53 | 60.92 | 54.89 | 47.47 | 42.89 | 42.00 | 36.14 | 27.78 | 27.78 |
| December | 44.23 | 43.74 | 41.35 | 35.57 | 30.37 | 27.47 | 25.85 | 16.28 | 9.17 | 6.78 |

MINIMUM WEATHER WINDOW [Hours]

| WS < 6m/s | 0 | 3 | 6 | 12 | 18 | 24 | 36 | 48 | 72 | 96 |
|-----------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| January | 59.68 | 59.09 | 58.47 | 55.22 | 51.67 | 47.20 | 44.62 | 33.33 | 25.83 | 21.13 |
| February | 77.54 | 77.39 | 76.51 | 72.67 | 66.70 | 64.89 | 64.04 | 55.50 | 48.20 | 43.23 |
| March | 89.30 | 89.25 | 88.98 | 87.28 | 82.53 | 79.84 | 78.66 | 78.66 | 73.90 | 65.16 |
| April | 84.94 | 84.75 | 84.17 | 81.50 | 71.94 | 62.25 | 60.25 | 56.61 | 46.31 | 36.06 |
| May | 51.10 | 50.62 | 47.90 | 41.56 | 16.02 | 6.91 | 6.26 | 4.06 | 3.09 | 3.09 |
| June | 27.33 | 26.36 | 24.14 | 17.86 | 16.39 | 13.42 | 12.58 | 10.22 | 5.44 | 2.97 |
| July | 17.53 | 16.51 | 14.09 | 10.19 | 8.28 | 6.88 | 5.35 | 5.35 | 2.18 | 0.00 |
| August | 35.48 | 34.73 | 33.47 | 29.65 | 26.77 | 23.82 | 22.90 | 21.64 | 19.76 | 15.51 |
| September | 65.28 | 64.97 | 64.00 | 61.19 | 58.58 | 54.92 | 52.25 | 51.17 | 49.58 | 49.58 |
| October | 93.66 | 93.66 | 93.39 | 93.39 | 90.27 | 86.37 | 86.37 | 85.13 | 81.75 | 79.62 |
| November | 83.69 | 83.39 | 82.83 | 81.33 | 78.44 | 76.72 | 73.44 | 72.36 | 62.03 | 52.78 |
| December | 67.34 | 66.75 | 65.64 | 61.69 | 55.07 | 51.98 | 48.67 | 47.13 | 40.36 | 27.25 |

MINIMUM WEATHER WINDOW [Hours]

| WS < 7m/s | 0 | 3 | 6 | 12 | 18 | 24 | 36 | 48 | 72 | 96 |
|-----------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| January | 76.21 | 75.94 | 75.35 | 72.02 | 67.34 | 67.34 | 67.34 | 65.30 | 53.49 | 48.04 |
| February | 88.03 | 87.97 | 87.80 | 86.76 | 84.16 | 83.60 | 82.62 | 81.29 | 79.34 | 76.68 |
| March | 96.61 | 96.56 | 96.42 | 96.05 | 95.46 | 94.33 | 94.33 | 94.33 | 92.50 | 92.50 |
| April | 95.33 | 95.33 | 95.33 | 95.33 | 92.08 | 87.97 | 86.36 | 83.97 | 80.19 | 79.58 |
| May | 73.66 | 73.41 | 72.72 | 69.84 | 53.36 | 36.34 | 35.67 | 32.28 | 23.71 | 15.32 |
| June | 45.11 | 44.36 | 42.06 | 37.69 | 31.00 | 27.50 | 25.14 | 22.78 | 13.94 | 9.39 |
| July | 34.27 | 33.15 | 29.95 | 25.78 | 20.51 | 15.54 | 12.82 | 9.49 | 5.08 | 0.00 |
| August | 53.04 | 52.20 | 50.13 | 46.34 | 41.24 | 35.81 | 34.87 | 32.50 | 32.50 | 30.46 |
| September | 75.33 | 74.75 | 73.58 | 70.97 | 68.28 | 64.53 | 63.75 | 61.69 | 59.89 | 57.50 |
| October | 97.74 | 97.72 | 97.63 | 97.45 | 97.45 | 97.45 | 97.45 | 97.45 | 96.91 | 96.91 |
| November | 94.83 | 94.83 | 94.14 | 93.44 | 92.53 | 91.53 | 90.81 | 89.72 | 86.44 | 83.94 |
| December | 86.63 | 86.39 | 85.79 | 83.05 | 80.23 | 79.20 | 78.53 | 77.27 | 69.71 | 66.32 |

MINIMUM WEATHER WINDOW [Hours]

| WS < 8m/s | 0 | 3 | 6 | 12 | 18 | 24 | 36 | 48 | 72 | 96 |
|-----------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| January | 92.93 | 92.88 | 92.34 | 91.32 | 88.58 | 88.01 | 88.01 | 88.01 | 84.38 | 77.58 |
| February | 95.42 | 95.33 | 95.09 | 93.85 | 92.20 | 92.17 | 92.17 | 92.17 | 92.17 | 89.45 |
| March | 99.25 | 99.25 | 99.25 | 98.98 | 98.98 | 98.44 | 98.44 | 98.20 | 98.20 | 98.20 |
| April | 99.03 | 99.03 | 99.03 | 99.03 | 99.03 | 97.42 | 97.42 | 95.31 | 95.31 | 94.36 |
| May | 89.81 | 89.78 | 89.46 | 88.79 | 84.68 | 76.56 | 76.56 | 72.98 | 69.33 | 65.59 |
| June | 62.28 | 61.69 | 60.00 | 57.83 | 50.97 | 48.25 | 47.31 | 44.94 | 43.31 | 33.83 |
| July | 55.73 | 55.00 | 51.85 | 45.73 | 41.05 | 33.98 | 32.23 | 28.84 | 24.25 | 24.25 |
| August | 71.75 | 70.97 | 68.52 | 65.16 | 61.96 | 57.55 | 56.13 | 51.37 | 45.78 | 43.31 |
| September | 87.33 | 87.22 | 86.47 | 84.08 | 81.17 | 76.97 | 76.97 | 73.69 | 71.78 | 71.78 |
| October | 99.70 | 99.70 | 99.70 | 99.70 | 99.70 | 99.70 | 98.79 | 98.79 | 98.79 | 98.79 |
| November | 99.19 | 99.19 | 99.08 | 98.61 | 98.61 | 98.61 | 97.64 | 96.36 | 96.36 | 96.36 |
| December | 95.51 | 95.43 | 95.29 | 94.89 | 94.43 | 93.92 | 93.92 | 93.92 | 93.92 | 89.21 |

Table 4-8 **Downtime** probability for wind speed criteria ($WS > x$). Tables for wind speed criteria of $WS > 1.0\text{m/s}$, 2.0m/s , 3.0m/s , 4.0m/s , 5.0m/s , 6.0m/s , 7.0m/s , 8.0m/s , 9.0m/s , 10.0m/s , 11.0m/s , 12.0m/s , 13.0m/s and 14.0m/s are presented

| MINIMUM DOWNTIME [Hours] | | | | | | | | | | |
|--------------------------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| $WS > 1\text{m/s}$ | 0 | 3 | 6 | 12 | 18 | 24 | 36 | 48 | 72 | 96 |
| January | 99.49 | 99.44 | 99.44 | 99.44 | 99.44 | 98.58 | 98.58 | 98.58 | 98.58 | 98.58 |
| February | 99.47 | 99.47 | 99.47 | 99.23 | 98.37 | 98.11 | 98.11 | 98.11 | 98.11 | 98.11 |
| March | 99.11 | 99.11 | 99.11 | 98.84 | 97.93 | 96.21 | 96.21 | 95.19 | 93.47 | 93.47 |
| April | 99.75 | 99.75 | 99.75 | 99.75 | 99.75 | 99.75 | 99.75 | 99.75 | 99.75 | 99.75 |
| May | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 |
| June | 99.81 | 99.81 | 99.67 | 99.67 | 99.28 | 99.28 | 99.28 | 99.28 | 99.28 | 99.28 |
| July | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 |
| August | 99.87 | 99.87 | 99.87 | 99.87 | 99.87 | 99.87 | 99.87 | 99.87 | 98.47 | 98.47 |
| September | 99.69 | 99.69 | 99.69 | 99.69 | 99.25 | 99.25 | 98.44 | 98.44 | 96.47 | 96.47 |
| October | 96.42 | 96.37 | 95.65 | 95.40 | 93.01 | 90.32 | 85.46 | 84.41 | 79.97 | 73.15 |
| November | 99.08 | 99.08 | 99.00 | 99.00 | 98.61 | 96.86 | 95.11 | 92.56 | 90.78 | 90.78 |
| December | 99.73 | 99.73 | 99.73 | 99.73 | 99.73 | 99.22 | 99.22 | 99.22 | 99.22 | 99.22 |

| MINIMUM DOWNTIME [Hours] | | | | | | | | | | |
|--------------------------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| $WS > 2\text{m/s}$ | 0 | 3 | 6 | 12 | 18 | 24 | 36 | 48 | 72 | 96 |
| January | 98.17 | 98.17 | 98.17 | 97.20 | 96.51 | 95.46 | 94.65 | 93.41 | 93.41 | 93.41 |
| February | 96.69 | 96.69 | 96.60 | 96.34 | 95.63 | 91.99 | 91.99 | 90.66 | 84.93 | 84.93 |
| March | 95.32 | 95.22 | 94.95 | 94.22 | 91.67 | 89.52 | 88.06 | 84.62 | 77.10 | 73.01 |
| April | 97.00 | 96.97 | 96.83 | 96.83 | 96.00 | 93.78 | 93.06 | 88.53 | 86.78 | 82.08 |
| May | 99.62 | 99.62 | 99.62 | 99.62 | 99.62 | 98.52 | 98.52 | 97.34 | 97.34 | 97.34 |
| June | 98.50 | 98.50 | 98.28 | 98.28 | 97.33 | 97.33 | 95.72 | 95.72 | 93.86 | 93.86 |
| July | 99.84 | 99.84 | 99.84 | 99.27 | 99.27 | 99.27 | 99.27 | 99.27 | 99.27 | 99.27 |
| August | 98.33 | 98.31 | 98.01 | 96.67 | 95.91 | 95.32 | 95.32 | 95.32 | 95.32 | 93.15 |
| September | 95.28 | 95.14 | 94.61 | 93.86 | 93.08 | 88.64 | 87.22 | 84.75 | 75.14 | 74.47 |
| October | 80.56 | 80.27 | 78.04 | 72.42 | 67.55 | 63.33 | 60.38 | 56.77 | 51.24 | 43.49 |
| November | 93.86 | 93.78 | 93.36 | 91.03 | 89.22 | 84.67 | 83.81 | 80.44 | 77.67 | 67.81 |
| December | 97.82 | 97.77 | 97.63 | 96.58 | 96.58 | 96.07 | 96.07 | 96.07 | 90.77 | 90.77 |

| MINIMUM DOWNTIME [Hours] | | | | | | | | | | |
|--------------------------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| $WS > 3\text{m/s}$ | 0 | 3 | 6 | 12 | 18 | 24 | 36 | 48 | 72 | 96 |
| January | 93.71 | 93.63 | 93.15 | 91.56 | 90.59 | 89.01 | 88.25 | 86.08 | 80.99 | 72.31 |
| February | 88.18 | 88.03 | 87.03 | 85.93 | 81.06 | 78.07 | 78.07 | 75.80 | 59.40 | 49.29 |
| March | 85.08 | 84.97 | 84.65 | 83.44 | 70.83 | 56.99 | 56.26 | 45.83 | 41.08 | 35.97 |
| April | 87.36 | 87.36 | 87.17 | 86.36 | 76.39 | 56.89 | 52.56 | 50.11 | 41.14 | 33.61 |
| May | 98.15 | 98.15 | 98.15 | 98.15 | 97.39 | 96.26 | 95.56 | 94.49 | 94.49 | 92.07 |
| June | 96.39 | 96.31 | 96.03 | 95.39 | 92.83 | 91.67 | 91.67 | 91.67 | 89.89 | 87.25 |
| July | 98.87 | 98.87 | 98.76 | 98.36 | 97.90 | 97.28 | 97.28 | 97.28 | 97.28 | 97.28 |
| August | 93.68 | 93.58 | 93.09 | 91.51 | 89.44 | 88.33 | 88.33 | 87.23 | 85.81 | 81.13 |
| September | 83.22 | 83.00 | 81.83 | 76.92 | 73.08 | 68.75 | 67.94 | 63.42 | 57.92 | 57.31 |
| October | 57.77 | 56.56 | 54.52 | 48.95 | 41.29 | 36.32 | 32.66 | 28.20 | 23.92 | 15.16 |
| November | 82.08 | 81.81 | 80.86 | 78.83 | 74.89 | 66.28 | 65.56 | 58.56 | 53.50 | 45.53 |
| December | 91.53 | 91.44 | 90.64 | 88.75 | 85.34 | 81.46 | 81.46 | 81.46 | 76.59 | 70.14 |

| MINIMUM DOWNTIME [Hours] | | | | | | | | | | |
|--------------------------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| $WS > 4\text{m/s}$ | 0 | 3 | 6 | 12 | 18 | 24 | 36 | 48 | 72 | 96 |
| January | 79.89 | 79.68 | 78.15 | 75.70 | 71.24 | 68.55 | 68.55 | 66.59 | 53.28 | 48.04 |
| February | 68.76 | 68.29 | 66.37 | 61.97 | 54.02 | 46.90 | 41.93 | 34.69 | 28.19 | 21.75 |
| March | 64.25 | 63.87 | 62.04 | 52.20 | 36.99 | 25.27 | 23.66 | 17.39 | 6.88 | 4.35 |
| April | 66.64 | 66.56 | 65.47 | 56.69 | 39.94 | 22.19 | 20.67 | 13.81 | 10.03 | 7.81 |
| May | 91.77 | 91.69 | 91.48 | 90.51 | 84.46 | 75.22 | 74.54 | 71.13 | 59.68 | 54.84 |
| June | 93.06 | 92.97 | 92.61 | 90.11 | 87.61 | 86.42 | 85.50 | 83.33 | 79.75 | 75.11 |
| July | 96.29 | 96.26 | 95.65 | 94.27 | 92.55 | 90.86 | 90.11 | 88.84 | 88.84 | 88.84 |
| August | 85.03 | 84.70 | 83.23 | 80.32 | 79.11 | 77.90 | 77.15 | 76.32 | 71.29 | 68.87 |
| September | 64.69 | 64.28 | 61.94 | 57.44 | 53.92 | 50.50 | 48.86 | 47.92 | 47.92 | 45.47 |
| October | 34.22 | 33.44 | 31.18 | 24.41 | 16.42 | 13.71 | 13.71 | 11.32 | 9.89 | 7.77 |
| November | 60.58 | 59.94 | 58.11 | 52.67 | 42.03 | 33.44 | 31.58 | 27.06 | 21.86 | 17.28 |
| December | 77.70 | 77.37 | 76.65 | 73.72 | 70.00 | 65.38 | 64.60 | 61.04 | 52.49 | 44.63 |

MINIMUM DOWNTIME [Hours]

| WS > 5m/s | 0 | 3 | 6 | 12 | 18 | 24 | 36 | 48 | 72 | 96 |
|-----------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| January | 60.62 | 60.27 | 58.98 | 55.51 | 48.71 | 46.64 | 45.78 | 34.62 | 28.68 | 20.46 |
| February | 41.61 | 40.96 | 39.07 | 32.92 | 25.65 | 23.37 | 20.89 | 19.47 | 13.89 | 6.94 |
| March | 31.16 | 30.54 | 26.80 | 19.78 | 10.83 | 8.01 | 8.01 | 4.65 | 1.48 | 0.00 |
| April | 39.81 | 39.08 | 34.72 | 21.89 | 11.25 | 2.97 | 2.22 | 2.22 | 2.08 | 0.00 |
| May | 75.54 | 75.16 | 74.54 | 67.69 | 51.56 | 42.18 | 40.73 | 37.39 | 27.82 | 18.98 |
| June | 86.28 | 85.89 | 84.81 | 82.50 | 78.36 | 75.92 | 75.03 | 75.03 | 67.14 | 64.53 |
| July | 91.32 | 91.21 | 89.92 | 88.49 | 85.78 | 85.22 | 84.57 | 84.57 | 83.98 | 80.94 |
| August | 75.67 | 75.32 | 74.41 | 72.63 | 71.83 | 70.24 | 68.79 | 66.45 | 60.78 | 60.78 |
| September | 46.75 | 46.17 | 44.78 | 40.72 | 37.94 | 37.42 | 36.56 | 35.47 | 30.92 | 28.50 |
| October | 15.16 | 14.38 | 12.61 | 8.98 | 6.08 | 5.56 | 3.90 | 2.96 | 2.37 | 0.00 |
| November | 37.03 | 36.56 | 35.06 | 27.72 | 20.69 | 17.39 | 16.53 | 15.22 | 10.53 | 3.83 |
| December | 55.77 | 55.31 | 53.75 | 49.48 | 41.16 | 35.70 | 33.58 | 25.69 | 17.97 | 12.81 |

MINIMUM DOWNTIME [Hours]

| WS > 6m/s | 0 | 3 | 6 | 12 | 18 | 24 | 36 | 48 | 72 | 96 |
|-----------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| January | 40.32 | 39.87 | 38.49 | 35.00 | 27.93 | 24.09 | 20.00 | 13.49 | 10.08 | 6.24 |
| February | 22.46 | 21.87 | 20.83 | 17.94 | 11.79 | 8.42 | 6.41 | 3.87 | 3.16 | 3.16 |
| March | 10.70 | 10.35 | 8.66 | 5.62 | 3.76 | 2.72 | 2.72 | 0.00 | 0.00 | 0.00 |
| April | 15.06 | 14.47 | 11.36 | 4.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| May | 48.90 | 48.39 | 46.53 | 27.58 | 19.60 | 12.42 | 11.02 | 9.92 | 9.52 | 7.15 |
| June | 72.67 | 72.36 | 70.11 | 66.44 | 59.61 | 54.06 | 53.17 | 45.89 | 40.28 | 35.39 |
| July | 82.47 | 81.94 | 80.32 | 75.94 | 73.47 | 69.44 | 68.09 | 66.26 | 62.90 | 60.97 |
| August | 64.52 | 63.98 | 62.37 | 58.17 | 55.75 | 54.06 | 52.69 | 49.95 | 44.35 | 42.31 |
| September | 34.72 | 34.31 | 33.61 | 31.08 | 29.67 | 26.42 | 25.69 | 22.17 | 19.53 | 19.53 |
| October | 6.34 | 5.91 | 5.22 | 3.39 | 2.96 | 2.96 | 2.18 | 2.18 | 2.18 | 0.00 |
| November | 16.31 | 15.72 | 14.44 | 11.64 | 9.47 | 8.36 | 7.36 | 4.08 | 2.25 | 0.00 |
| December | 32.66 | 31.96 | 30.43 | 25.13 | 19.80 | 17.73 | 14.99 | 8.99 | 5.11 | 0.00 |

MINIMUM DOWNTIME [Hours]

| WS > 7m/s | 0 | 3 | 6 | 12 | 18 | 24 | 36 | 48 | 72 | 96 |
|-----------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| January | 23.79 | 23.60 | 22.63 | 18.71 | 13.04 | 10.73 | 7.90 | 2.66 | 0.00 | 0.00 |
| February | 11.97 | 11.85 | 11.14 | 9.13 | 5.29 | 5.29 | 3.66 | 3.66 | 2.98 | 2.98 |
| March | 3.39 | 3.28 | 2.93 | 0.97 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| April | 4.67 | 4.33 | 3.78 | 1.03 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| May | 26.34 | 25.78 | 22.28 | 10.30 | 8.09 | 6.34 | 6.34 | 6.34 | 6.34 | 3.15 |
| June | 54.89 | 54.25 | 51.89 | 43.72 | 38.08 | 35.33 | 34.36 | 32.03 | 32.03 | 27.08 |
| July | 65.73 | 64.70 | 61.80 | 56.64 | 51.94 | 47.23 | 45.91 | 41.96 | 35.03 | 26.40 |
| August | 46.96 | 46.10 | 43.68 | 38.55 | 36.10 | 34.41 | 34.41 | 29.54 | 26.32 | 21.75 |
| September | 24.67 | 24.47 | 22.08 | 19.17 | 17.50 | 14.11 | 11.75 | 9.03 | 9.03 | 6.61 |
| October | 2.26 | 2.20 | 2.10 | 1.16 | 0.75 | 0.75 | 0.00 | 0.00 | 0.00 | 0.00 |
| November | 5.17 | 5.00 | 4.25 | 2.22 | 1.33 | 0.81 | 0.00 | 0.00 | 0.00 | 0.00 |
| December | 13.37 | 12.81 | 11.84 | 8.74 | 6.86 | 5.30 | 3.87 | 3.31 | 0.00 | 0.00 |

MINIMUM DOWNTIME [Hours]

| WS > 8m/s | 0 | 3 | 6 | 12 | 18 | 24 | 36 | 48 | 72 | 96 |
|-----------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| January | 7.07 | 6.67 | 6.10 | 3.60 | 1.67 | 0.75 | 0.00 | 0.00 | 0.00 | 0.00 |
| February | 4.58 | 4.46 | 3.72 | 1.71 | 0.95 | 0.95 | 0.00 | 0.00 | 0.00 | 0.00 |
| March | 0.75 | 0.67 | 0.35 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| April | 0.97 | 0.78 | 0.39 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| May | 10.19 | 9.84 | 7.34 | 4.19 | 4.19 | 4.19 | 4.19 | 4.19 | 2.34 | 0.00 |
| June | 37.72 | 37.25 | 35.56 | 29.03 | 26.50 | 25.22 | 22.44 | 21.17 | 17.58 | 13.03 |
| July | 44.27 | 43.60 | 40.59 | 33.12 | 29.25 | 27.04 | 20.00 | 18.90 | 12.90 | 10.89 |
| August | 28.25 | 27.39 | 24.09 | 20.35 | 18.17 | 15.35 | 14.14 | 12.15 | 9.22 | 6.85 |
| September | 12.67 | 12.22 | 11.28 | 8.36 | 6.67 | 5.56 | 4.64 | 3.42 | 3.42 | 3.42 |
| October | 0.30 | 0.27 | 0.19 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| November | 0.81 | 0.47 | 0.33 | 0.33 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| December | 4.49 | 4.39 | 4.06 | 2.99 | 2.18 | 1.64 | 1.56 | 1.56 | 0.00 | 0.00 |





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